

# Fireball Hornet 470

This trio of classic, single trapeze symmetric spinnaker dinghies have stood the test of time. Half a century on since they were first launched, all three remain popular - but for very different reasons. We look at what they each have to offer today's dinghy sailor, on the water and off.

## 470

Designed in 1963 by André Cornu, the 470 was catapulted to international fame in 1976 when it was first granted Olympic status. In 1984 the first women's Olympic sailing event was held in the 470, and the class continues with separate men's and women's events today. Today over 40,000 boats have been built in 20 countries. Tight class rules prevent experimentation with fancy materials and systems in order to keep costs down.

## Hornet

This 1952 design comes from the drawing board of the infamous Jack Holt. The Hornet has maintained a healthy popularity within the UK as a national class, with fleets also spread as far a field as Poland, the Netherlands and Australia. With a one-design hull, the Hornet can be built in wood or fibreglass, with internal layouts varying within certain restrictions.

## Fireball

One of the UK's most popular double handers sailed at some 200 clubs across the country, the Fireball was first brought to life by Peter Milne back in 1961. With almost 15,000 boats now spread worldwide, the class has a strong international following. Restricted developments have enabled the class to move with the times without losing its classic scow hull shape. The latest designs are built in Kevlar/glass foam sandwich, whilst older fibre glass and wooden boats are also available. ▶



Many thanks to Shoreham Sailing Club for their kind hospitality and for allowing us to use their excellent facilities.

Photography: Emily Brown

Conditions: Force 0-3

## Review panel

**Ally Martin, 21**

**Weight** 57kg

**Height** 165cm

**History** Helmed 470s for 18 months, previously sailed 420s winning bronze at the ISAF Youth Worlds, and before that Optimists and National 12s



**Lottie Clay, 20**

**Weight** 68kg

**Height** 162cm

**History** Crewed Cadets and 420s, also sailed Lasers, and has been crewing in the 470 for about a year



**Peter Bennett, 50 (ish!)**

**Weight** 85kg

**Height** 183cm

**History** Has a wealth of dinghy experience, having competed in the Cadet, Boss, International 14, Phantom and Hornet classes



**John Shelton, 49 (ish!)**

**Weight** 85kg

**Height** 178cm

**History** Has a wealth of double handed dinghy experience, having competed in the Mirror, Flying Dutchman, International 14, Boss and Hornet classes



**Tom Foscett, 19**

**Weight** 62kg

**Height** 167cm

**History** After sailing in the 405 National Squad 2001-04 and briefly dabbling in 29ers, Tom has sailed Fireballs since 2004, achieving 10th at the 2006 Nationals and first Under 21 team at the 2005 Worlds

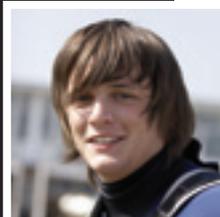


**Tim Needham, 18**

**Weight** 95kg

**Height** 196cm

**History** After sailing in the 405 National Squad 2001-04 and briefly dabbling in 29ers, Tim has sailed Fireballs since 2004, achieving 10th at the 2006 Nationals and first Under 21 team at the 2005 Worlds



Regardless of the fickle wind that greeted us on the day of our review, the six experienced members of our review panel were keen to get afloat and swap boats to see how each of these three double handed symmetric trapeze boats compared. Their enthusiasm was rewarded when the wind swung round and built to a pleasant force three sea breeze, giving perfect conditions to put the three boats through their paces...

### Rigging and launching

To begin with, onshore, each of the sailors took time to look over each other's boats and it soon transpired that when it comes to rigging, all three boats are relatively similar. Peter noted; "In terms of launching and setting them up I don't think there's much significant difference between any of them." However, the group agreed that the 470 had the appearance of being more complex, as John remarked; "There's an awful lot of string on the 470!" But as Ally explained, appearances can be deceptive; "We have most of our controls running across the middle of the boat so it looks like we've got more controls compared to your beoats although we actually don't!"

Peter commented; "I think the Hornet, in the way it's set up at least, is the simplest of the three. It seems to have the least amount of string." John added; "Once we're afloat, in practice we don't change the rig that much. The only major thing we regularly adjust is the mast ram." Tim noted that the Fireball also requires few set up changes once afloat; "For us it's the rake that we alter, and then the strut to suit." John continued; "On both our boats there's less to think about, although I did have the impression that the 470 might have been a lot more tweaky than it actually is." Ally confirmed his suspicions; "Yes there's a lot to play with; Lottie's always up the mast! We'll change our rig between almost every single race. Mast rake, spreaders, tension – we're changing everything all the time." Tom joked; "We can't be doing with that out at sea! The Fireball's spreaders are quite a lot higher than yours. We can't reach them standing on the boom like you can on the 470. Tim would have to shimmy up there!" "...And I'm 6ft 5!" added Tim.



The Fireball received some positive comments for its comfort rating when the breeze was light, although when the breeze increased and the helms had to hike, Ally thought it comparatively uncomfortable being used to the rounded side tanks of the 470. In contrast, the 470's chunky side tanks were cause for complaint from the crews! John commented; "The 470 was quite difficult to kick out from to get on the wire. You have to shorten the trapeze wire to make it easier to get in and out. Then when you're out you find you're too high and you have to lower yourself again." Lottie agreed that the 470's high, rolled side decks require a different trapeze technique to the other two; "There's a trick to it, you have to kind of jump to get in and out. It's much easier to get out on the other two boats as it's a much smaller step."

In terms of space, the Hornet led the way with an uncluttered cockpit. Peter also pointed out that despite being a one-design hull, the Hornet class rules allow complete freedom when it comes to internal layout, ▶

### Layout

Although the three boats look similar in appearance from a distance, when you get a bit closer, the first and most obvious difference to spot is the different hull dimensions which necessitate very different shapes and sizes of cockpit. Our reviewers felt the impact of these differences as soon as they swapped boats.

Used to the high boom of their Fireball, Tom and Tim noticed the lack of headroom in the 470 straight away; "There's no room in a 470," said our tallest test team member, Tim. "Well... there's lots of room widthways but nothing under the boom! It wasn't so bad roll tacking, but can you imagine wire to wire tacking?!"

Tom added; "In the tack, once you put the helm over, it's really hard to get under the boom." Ally laughed; "That's was on our rake one setting – can you imagine it on rake four?!" Tom also thought that; "Tacking the 470 was made more difficult because you had to pass the tiller around the back."

"We've found that roll tacking 470s well is really difficult," conceded Ally. "In contrast, with the Hornet it did just roll. Comparatively it was very nice and easy!"

John and Peter in the meantime found the Fireball trickier than the Hornet; "At one point Peter did manage to get the Fireball spinnaker pole down the back of his buoyancy aid!"

With the beamy 470 measuring a full foot wider than the other two, stepping into the streamlined Fireball came as a bit of a shock for 470 crew, Lottie; "We found it really narrow, which made moving around tricky, especially downwind. And I found that we were really close to the water in the Fireball." The Fireball's low freeboard also presented a challenge for the two Hornet sailors, as Peter remarked; "Because there's so little freeboard, I near as damn it fell out of the thing! You feel as though if you hike out you will end up in the water." Ally added; "We didn't like keeping the Fireball flat; it felt more normal keeping it heeled slightly!" Tim explained; "Yes, because it's got chines, if you give it a slight bit of heel - about 4 degrees, just enough to keep you out of the water – you will go faster."





which results in a big variation in layout, with some boats choosing to have buoyancy bags and others built in tanks. With this open rule also comes the option of having spinnaker bags or a chute; John explained that around three-quarters of the fleet have chutes built into the hull, whilst the rest opt for bags. The two different systems require different techniques, so it's down to the owner of the boat to pick whichever system suits them.

Whereas most boats conform to a standard set up in the 470 fleet, like the Hornets the Fireball class allows some flexibility in layout, and chutes are an option (although with the low freeboard waves washing down the chute and into the cockpit can be an issue and so most owners go for bags).

In the Hornets and Fireballs this free thinking also extends to the rig and sails. The most significant development in the Fireball class in recent years has been the move to allow Kevlar sails. Currently there is some debate as to whether to allow carbon into the class.

John was keen to point out that there is still a lot of scope to develop the Hornet mainsail, which in theory at least permits full length battens, but in practice sticks to a more traditional design; "There isn't a sail maker who has quite got their head around that yet!" laughed John.

### Performance afloat

In terms of sail plan, the Fireball has the smallest combined main and jib area, with the Hornet having the

largest. However, on the water, these two boats were quite comparable in speed, due to the Fireball having a much lighter hull.

With its main and jib area adding up to 12.6m<sup>2</sup> set on a hull weighing 120kgs, the 470 loses out on performance slightly against the other two. This became even more apparent when the heaviest crew in our test team, Peter and John, jumped onboard. "I think Peter's first comment when we got into it was 'where are the taps?!'" laughed John. "I think it was quite obvious that the 470 was set up for the girl's weight, as we struggled to get any kind of power from it. Whereas Lottie was flat out on the wire, I was still scrunched up on the gunnel!"

Despite Tom pointing out that Peter and John together weighed 45kgs more than the girls, the group agreed that the 470 did feel somewhat underpowered compared to the other two boats in the conditions of the day. However, Peter made the fair comment that; "I'm sure over a variety of conditions there's no real difference between the three boats. I think some days one will go faster and I think some days another will. I think today the 470 felt underpowered but I don't know whether that's just because of the set up not matching the crew weights or whether it's just because you've got a slightly smaller sail area and it just takes an extra few knots to get you up and then you would be faster again. I don't think you could make a choice between the three boats on the basis of one of them being hugely faster than the other two." Indeed, on paper, the three boats rate closely on handicap, with the Hornet and 470 sharing a PY of 973 with the Fireball just a fraction slower at 982.

When it comes to upwind performance, the three boats were found to be reasonably similar; the main difference came in the way they handled when the wind and waves increased a little. The 470 is designed to plane upwind, so naturally a little bit of pointing ability has to be sacrificed to encourage it to do so when the breeze is up. The Fireball is notorious for diving through waves, with its low freeboard and rounded bow. In contrast, the Hornet's high freeboard and pointed bow mean it cuts through the waves very easily. This difference is reflected in the geographical spread of these two classes, as Tom described; "The Fireballs are found more inland. There are a lot of inland clubs who have big fleets, like Draycote and Staunton Harold." Peter added; "If it was a choice of sailing a Fireball at sea or a Hornet inland you'd definitely want to do it the other way around!"

### Downwind sailing

When it comes to downwind sailing, the 470 boasts the biggest spinnaker, and also responds the most to crew kinetics, as Tom discovered; "It's dead easy to cheat in this boat! It rolls and it pumps and it's brilliant... Err, not that I'd ever cheat of course!" he quickly added. Ally commented; "I tried to do that in the Fireball and it didn't make nearly as much difference." On paper, there is little difference in size between the three spinnakers and on the water the boats all kept reasonable pace with each other offwind.

The Hornet struggled a little on the tight reaches due





to its overly long 2.5 metre spinnaker pole. Ally commented; "When we were on the reach we felt like we were struggling for height with that, just because it made the spinnaker so tight along the foot." John replied; "I don't know why the class has gone down that route, it used to be a two metre pole like the 470 and the Fireball. But there's no standard in the Hornet. On our boat, we used to have a single pole with reversible ends, like the Fireball. Now we are experimenting with twin poles. Some boats have automatic flyaway systems, like on a 505, and others have single flyaway systems - you can take your choice!"

The 470 differs from the other two boats by keeping its spinnaker pole loose in the bottom of the boat, as class rules forbid it being stowed on the boom. This took a bit of getting used to for both John and Tim. John laughed; "It's a bit strange. When we went for the pole I didn't know where it had gone!" The other two crews also noticed that the 470's spinnaker pole D-ring was much lower on the mast. "I went to put the pole on the mast and it was down here somewhere," says Tim, gesturing to the floor. Lottie added; "With the Fireball I really struggled to reach it! It was up here somewhere above my head."

### Capsizing

Although our test teams opted out of capsize drills on the day, they were able to swap notes from previous experience. John started by saying that, due to the variation in deck layouts, it was difficult to generalise when it came to the Hornet.

Ally commented that the 470 typically; "Floats really high on its side. It pretty much has to turn turtle before we can get on the board because it's so high. But unless it's absolutely honking, generally it only takes one of you to pull it up whilst the other stays in the water sorting out the spinnaker."

Tom remarked; "The Fireball floats pretty high when it's capsized, but not so high that you can't get onto the board. Even if you're small you can reach. I'm not that big and I can get it up by myself. The board is only about a foot off the water." Tim added; "The Fireball fills up, but the water soon goes out the back and we've got self bailers too."

### Who for?

Whilst all three boats share a common crew weight bracket of around 140-145kgs, 470 teams tend to stick closer to the optimum 130kgs, whereas Fireball and Hornet combinations tend to vary a little more widely. Peter suggested that the Hornet probably has the widest range of weights, particularly helms, whilst Tim explained that for the Fireball the most important consideration is to have a small helm with a big crew on the wire.

Due to its status as the men's and women's Olympic double handed dinghy, the 470 primarily attracts either all-boy or all-girl crews, and is a natural choice for graduates of the RYA's 420 youth training programme who are hoping to realise their Olympic dreams. Ally was keen to point out however, that the 470 rig requires much more adjusting than the 420, and so there is a big



...the majority of Hornets are raced in handicap races at club level...

step in the learning curve for those making the transition. Of the three boats reviewed here, the 470 has by far the least active UK circuit. Ally went on to explain; "The main reason people sail these boats is to see if they can compete with the world's best. But it's really hard to get your fleet racing up to that level because the top guys are away training or competing all the time. They are hardly ever in the country to sail against."

In contrast, the Fireball is one of the most active fleets in the UK, with around 70 boats at the Nationals; and numerous top dinghy sailors have made their mark in this competitive class. The Fireball also enjoys a strong international following, with annual European and World Championships. It's a popular boat for mixed teams to compete in, and the supportive UK class association encourages development across all levels with regular class coaching sessions.

The Hornet class is very widespread around the UK, but there are few concentrated fleets, so the majority of Hornets are raced in handicap races at club level. Despite this, the open meeting circuit is well supported and the National Championship usually attracts a respectable turnout of around 50 entries. ▶



### Price tags

One of the attractions of the Hornet is its high build quality and renowned longevity; “They do go on forever,” said John. “I reckon Mike McNamara’s boat must be 25 years old and he is current National Champion! It’s a bit of a problem for the class because nobody ever has a reason to buy a new one and so the numbers of new boats that get built are quite small, and currently there is only one builder. There are some good second hand boats around for £3500 to £4000, but to be honest because the boats last so long you can pick up a pretty good older boat for around £1500 to £2000.”

“It’s difficult to get hold of a good second hand 470,” said Ally. “We had to get ours from Germany because there wasn’t anyone selling them in Britain at the time. They are pretty hard to get hold of, especially ones which are in good shape, because people sail them until they’ve got everything they can out of it and then they get a new one. The top guys even have two or three boats. To buy new the best ones, which are imported from New Zealand, are around £13000. We bought ours second hand and it was around £7000. That’s the difference being an Olympic class makes – there’s so much more money around because of funding from all

the different countries’ governing bodies being poured into the class.”

The Fireball has a buoyant second hand market, with nearly-new boats holding their value well and plenty of older wooden boats available for those looking for a cheap way into the class. “A new Fireball is around £9000. Second hand, our boat was £6500 and that was a very good deal; it was 2½ years old at the time,” recalled Tim. Tom added; “The foam sandwich boats seem to last quite well. The fleet is currently dominated by Winder, who make their boats really stiff, so although in theory there should be variation in builders at the moment there isn’t really.”

### Conclusions

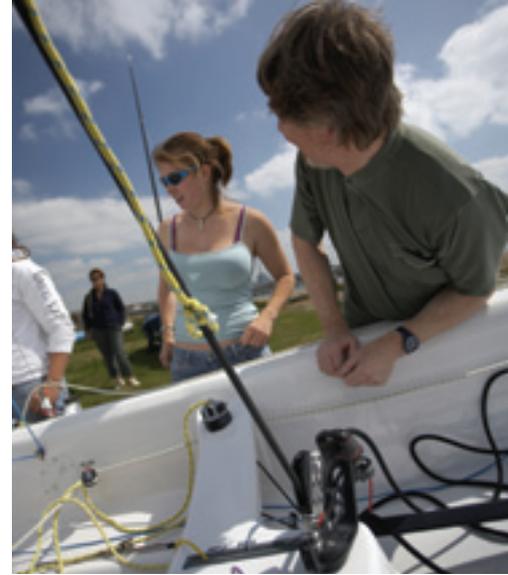
Whilst all six sailors enjoyed the opportunity to swap classes for a few hours, each felt happy to be taking home their own dinghy at the end of the day. The overwhelming consensus was that although these three dinghies are very similar on paper, in practice they have each developed their own niche characterised not only by the boat’s physical traits and demands, but also developed by the class culture which has evolved over many years. ▶



# Comparative boat review:

## Fireball v Hornet v 470

	Fireball	Hornet	470
Length (m)	4.93	4.88	4.7
Beam (m)	1.37	1.4	1.68
Weight (kg)	79.4	126	120
Rec crew weight (kg)	120 – 170	125 – 150	110 – 145
Main and jib (m <sup>2</sup> )	11.43	15.42	12.7
Spinnaker (m <sup>2</sup> )	13.01	12.3	14.3
PN number	982	973	973
Class association	<a href="http://www.fireball-dinghy.org.uk">www.fireball-dinghy.org.uk</a>	<a href="http://www.hornet.org.uk">www.hornet.org.uk</a>	<a href="http://www.470.org/gbr">www.470.org/gbr</a>



## Right to reply

### Rebecca Marriott – 470 association representative

The 470 is a difficult class to sail well in unless you're prepared to invest a lot of time and money, in that people sail them full time and there is a constant bid to have the best equipment. However, in the class, there are still a number of 'weekend warriors', those who don't have the ability to do this, and still come out winning at times. Being a small class the National Ranking Circuit is the main racing for the 470 and it's the perfect place to test your skills against some of the country's top sailing teams.

To sail, the 470 requires a little time invested in boat handling to get up to scratch, although this is like in any other boat you're unfamiliar with. It is renowned for being a tweaky boat with lots of string, but not only does this increase your awareness of your rig, but it makes the boat much easier to handle in different conditions, once you know how to set it up. It has the reputation for being a harder boat to sail, but that is the nature of an Olympic boat – given the opportunity, the Hornet and Fireball would raise the levels of boat handling skills far above the scale of those who aren't fortunate to sail all the time.

The 470 is a hugely forgiving boat and although it is usually sailed by a very small helm and around a 70kg crew, this is not essential unless you're competing at the top end – the weight range is far larger for club based/open meeting level racing.

### Liam McGrath, Class Chairman, Hornet class association

The Hornet Class thank Dinghy Sailing Magazine for this opportunity. The Hornet is an exciting yet forgiving boat to sail. At our Europeans last year, the youngest helm, at 15 years with a crew aged 17, achieved 10th overall, in winds of force 5 and above. Their boat was built in 1981. At the other end of the age spectrum we have a husband and wife team well beyond official retirement age, who have competed in every national championship for the last fifty years. It is an excellent boat to introduce younger crews to fast trapeze sailing with competitive boats available for about £2000. A lot of boat for not much money, and it is still possible to be at the front of the fleet.

The Hornet has a very friendly and dedicated class membership with active fleets, the most recent to emerge at Starcross in Devon and a re-emergence of one at Salcombe. The variations possible for internal deck layout allow owners to tailor their boats to need. We are in negotiation with a new glassfibre builder which looks very exciting and promises to secure the future of the class here; whilst in Poland it is possible we shall see both glassfibre and wood builders offering further opportunity for affordable entry.

There are few boats offering upwind planing and blistering offwind performance whilst being manageable and comfortable in every condition. I'd like to thank John and Peter for their contribution to the class by taking part in this exercise.

### Tim Saunders, Publicity Officer, Fireball association

In the UK we have a strong open meeting circuit with everyone from relative novices to world champions competing. Generally open meetings attract over 30 boats and the Nationals averages around 70. All championships are open and with many European countries sailing Fireballs there are many opportunities to race at some great venues outside of the annual championships.

Progression to the top is made easier through the splitting of results into fleets, operating a buddy system at the Nationals and through class training events. If you need help with your boat all you need to do is ask and someone will know the answer. The competitive weight range of the class is wide and mixed teams sailing competitively both ways round are a common sight both in the UK and abroad.

The class is well represented both inland and at sea clubs around the country. Unfortunately for the test crews there weren't any big waves to enjoy the Fireball's fantastic surfing ability offwind. A little more breeze and the Fireball would have happily planed to windward, which it does extremely effectively. Today's wider bowed boats are easier to sail than the older narrow bow designs on the sea, but that doesn't stop classic boat owners getting out there and racing.

Fireballs are extremely long lasting with all the builders producing very competitive boats. The light weight of the boat makes it easy to manoeuvre on the shore and quick to right after a capsize. Second hand foam sandwich boats can be bought for around £1500. Last year the class introduced a Youth Championships which proved very popular and we will be running this again later in the year.